Novel Use of Prostate Urethral Lift for a Patient With Bladder Outlet Obstruction

NYU Case of the Month, August 2019

Christopher Kelly, MD
Department of Urology, NYU Langone Health, New York, NY

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Bladder outlet obstruction (BOO) secondary to benign prostate hypertrophy (BPH) is a common cause of lower urinary tract symptoms (LUTS). Treatments for BOO include medical therapy, minimally invasive treatment, and/or open surgery. The mainstay of therapy is to reduce outlet resistance.

New minimally invasive treatments should at least rival the effectiveness of current standard techniques, demonstrate durable efficacy, and be associated with favorable safety profile. Other important qualities should be minimal loss of productivity, erectile dysfunction (ED), and ejaculatory dysfunction (EjD).

Among the newer novel techniques is the prostate urethral lift (PUL; UroLift® System, NeoTract Inc., Pleasanton, CA; Figure 1). It has attracted attention as a minimally invasive technique that is effective and safe with minimal to no negative impact on erectile or ejaculatory function.[1,2]

In the following case, we show how a PUL was used safely and effectively as a follow-up procedure to improve symptom scores while still preserving ejaculatory function after initial transurethral resection of the prostate (TURP) did not provide adequate symptom reduction.

Case Presentation

A 74-year-old white man with a past medical history of hypertension presented to our practice with the chief complaint of bothersome LUTS.

Evaluation at NYU Langone Health

- The patient had an American Urological Association Symptom Score (AUASS) of 26 with nocturia 3 to 4 times, daytime frequency/urgency, slow urinary stream, urinary hesitancy, and sensation of incomplete emptying.
- Bowel and sexual function were normal.
- Physical examination demonstrated a soft abdomen, normal male genitalia, adequate meatus, normal pelvic muscle tone, and a large smooth prostate (50+ g).
- Laboratory studies revealed a serum prostate-specific antigen (PSA) level of 2.4 and a normal urinalysis.
- Postvoid residual bladder scan revealed 186 mL.
- A renal sonogram showed normal upper tracts, trabeculated bladder without diverticula, and a 90-g prostate with a prominent median lobe.
- Cystoscopy confirmed no urothelial malignancy or strictures.

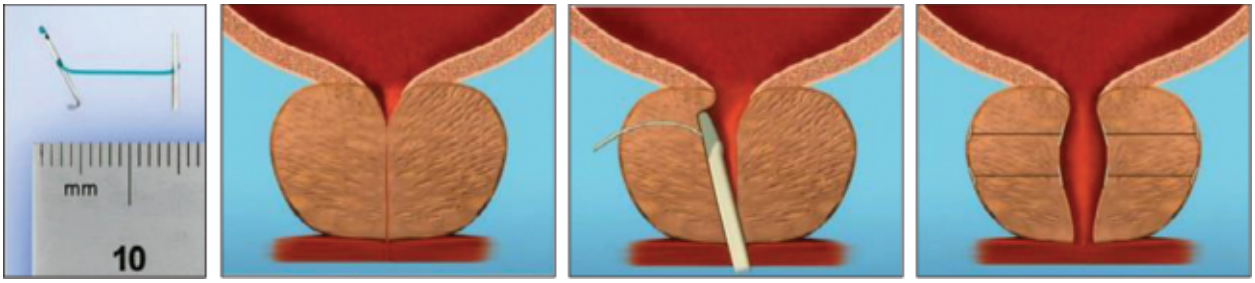

Figure 1. The UroLift® System (NeoTract Inc., Pleasanton, CA) implants are tissue-retracting devices composed of a nitinol capsular tab (diameter, 0.6 cc; length, 8 mm), an adjustable polyethylene teraphtalate nonabsorbable monofilament (diameter, 0.4 mm), and a stainless steel urethral end piece (8 × 1 × 0.5 mm).[3] Figure courtesy of NeoTract, Inc.

Management

The patient was started on medical therapy with an alpha-blocker only, declining a 5-alpha- reductase inhibitor, but symptom relief was modest. A video-urodynamic study showed normal capacity and compliance with low-grade terminal detrusor contractions on filling, and a high pressure (PdetQmax) low flow rate (Qmax) on voiding. He was counseled on minimally invasive techniques but wanted one that would be able to preserve ejaculatory function. Given his prostate size and median lobe, he was offered a GreenLight™ Laser Therapy (Boston Scientific, Marlborough, MA) photovaporization (PVP) or TURP, both with apical preservation. He elected to have an ejaculation preserving TURP (EP-TURP) to preserve anterograde ejaculation. He was discharged on postoperative day 1.

He developed transient postoperative urinary retention requiring a temporary catheter placement.

An indwelling catheter was removed on postoperative day 4 and patient voided with a postvoid residual of 36 cc. Four weeks postoperatively, his International Prostate Symptom Score (IPSS) decreased to 12. On 3-month follow-up, the patient's chief complaint was a bothersome slow urinary stream and sensation of incomplete bladder emptying. He reported ejaculatory preservation, but his IPSS increased to 20. Urinalysis was unremarkable, urine culture negative, and his postvoid residual was increased to 158 mL. An office cystoscopy revealed a large, wide proximal TURP defect but obstructing residual prostatic apical tissue around the verumontanum bilaterally. He was counseled that his remaining prostate tissue was likely the cause of his subjective complaints and objective findings and was offered the choice of a TURP or PVP that would likely result in permanent EjD or even perhaps urinary incontinence. The patient underwent an uncomplicated PUL procedure on his remaining prostate apical tissue. One implant was deployed on each side of the prostate apical tissue at 2 o'clock and the 10 o'clock position creating a wider channel on the anterior portion of the apex. The patient did not require an indwelling urinary catheter and had an uncomplicated recovery. At 2-week follow- up, his IPSS score fell to 8 and at 1 month, he reported ejaculatory preservation.

Discussion

Our patient had problematic residual prostatic tissue after his initial TURP causing persistent BOO. This prostatic apical tissue around and proximal to the verumontanum was left untouched purposefully to allow for ejaculation preservation (EP); this modification has been described by others with the TURP (EP-TURP) or photovaporization (EP-PVP).[4,5] Although the mechanism of ejaculatory preservation is not fully understood, there is a growing belief that preservation of the tissues around the verumontanum is more important than bladder neck preservation in preserving ejaculation function.[6] Unfortunately, leaving apical tissue behind does raise the risk of persistent urinary obstruction and the need for retreatment as in our patient. The PUL provided a quick solution by widening the apical channel, thereby reducing urinary obstruction while also preserving ejaculatory function. One alternative retreatment would be to simply ablate more tissue using the original TURP or PVP with the risk of ablating too much tissue thus causing permanent retrograde ejaculation or even urinary incontinence. PUL offers a reversible alternative with minimal to no EjD or urinary incontinence.

Conclusions

Persistent obstruction from residual prostate tissue following an EP-TURP may be effectively treated with non-ablative PUL that widens the prostatic urethra and may further improve IPSS scores with preservation of ejaculatory function. This case presents a unique patient

population and suggests an expanded role for PUL when ablative techniques such as EP-TURP have not provided adequate deobstruction. However, the device's efficacy, safety, and durability have been studied mostly in patients not having undergone prior deobstructive prostate procedure so recently. We suggest that further research, such as a randomized, comparative trial, needs to be explored in similar cases to harness the benefits of PUL depicted in this case report. ■

References

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